

DR FERNAND LABRIE

Founder of Endoceutics

2795 boul. Laurier, suite 500, Quebec (QC) G1V 4M7

Tel: 418-653-0033 | Email: fernand.labrie@endoceutics.com | Website: www.endoceutics.com

Endoceutics is a private pharmaceutical company operating in the field of women's health and hormone-sensitive cancer prevention and treatment. Founded by Dr Fernand Labrie, who previously discovered and developed medical castration with GnRH agonists and combined androgen blockade, the first treatment shown to prolong life in prostate cancer, the firm is the world leader in the mechanism of action of sex steroids.

After retirement at Laval University at the age of 69 years, Dr Labrie decided to devote his full time efforts to Endoceutics, which he founded in order to apply to clinical medicine the discoveries of his team, concentrating on the novel science of intracrinology which his team discovered.

The business of Endoceutics goes from fundamental discovery to clinical research, manufacturing and commercialisation, thus representing a complete pharmaceutical company. The idea behind this strategy is to always look for clinical applications using the best technology and never be afraid of changes which are the key to improved medicine.

Following approval of Intrarosa™ by the FDA in November 2016 for the treatment of dyspareunia, a predominant symptom of vulvovaginal atrophy due to menopause, Endoceutics focuses on developing non estrogen-based therapies for sexual dysfunction and the other symptoms of menopause, including hot flushes, osteoporosis and muscle loss. Hormonal therapies for breast, uterine and prostate cancer, male hypogonadism as well as endometriosis are also under development. Here Dr Labrie, one of the most accomplished researchers in the international scientific community, discusses the implications of this innovative new treatment for women's health.

Career path

After obtaining his MD and PhD (endocrinology) degrees with Honours at Laval University, Quebec City, Canada, Fernand Labrie pursued his postdoctoral training at the University of Cambridge, UK, first in the Laboratory of Professor Asher Korner, a leader in molecular biology of steroid action and then, in the Laboratory of Molecular Biology with Professor Frederick Sanger, twice Nobel laureate in medicine for the first amino acid sequencing of a protein (insulin, 1958) and then first nucleotide sequencing of a DNA (1980). Professor Labrie then isolated the first mammalian messenger RNA (rabbit hemoglobin) and could achieve its partial nucleotide sequencing.

Upon returning at Laval University in 1969, he founded the first Laboratory of Molecular Endocrinology that

became one of the most important research groups in endocrinology in the world with a total personnel of up to 350 people including 32 senior scientists. Between 1982 and 2008, he has been scientific director of the CHUL (Centre Hospitalier de l'Université Laval) Research Center (1200 employees) and, at a time, the largest medical research Institute in Canada. From 1990 to 2002, Professor Labrie has been head of the Department of Anatomy and Physiology at the Faculty of Medicine, Laval University, while, between 1992 and 1995, he was president of the Fonds de la Recherche en Santé du Québec, the granting agency for health research in the province of Quebec.

A major contribution of Professor Labrie to clinical medicine has been the discovery and development of medical castration with GnRH (Gonadotropin-Releasing Hormone) agonists which replaced surgical castration worldwide. This achievement was soon followed by the discovery and development of Combined Androgen Blockade (CAB), the first treatment shown to prolong life in prostate cancer. Medical castration with GnRH agonists and combined androgen blockade have become the standard hormonal therapy of prostate cancer worldwide. This has been the first combination of drugs approved by Health Authorities, namely by Health Canada in 1984 and by the US FDA in 1989. This discovery is at the basis of the recent successfully pharmaceutical development of enzalutamide and abiraterone acetate to achieve blockade of the action and formation, respectively, of the androgens made locally in the prostate in castration-resistant prostate cancer.

Afterwards, Professor Labrie discovered that a large proportion of androgens and estrogens in women (100% after menopause) and men are made in peripheral tissues from the inactive precursor dehydroepiandrosterone (DHEA) by the mechanisms of intracrinology. DHEA is transformed locally and intracellularly into small amounts of androgens and estrogens according to the local needs without biologically significant release of the active sex steroids in the circulation, thus avoiding potentially negative systemic effects. Professor Labrie and his group also discovered and developed the most

potent and specific antiestrogen, namely acolbifene, a compound having exclusively estrogen blocking activity in the human breast and uterus.

Major Achievements

Professor Labrie's research findings are described in more than 1330 scientific publications and have been cited more than 50,000 times. Dr Labrie is the most cited Canadian scientist among all disciplines in the international literature. He received the King Faisal International Prize in medicine and numerous other awards, including the Friesen Award of the Canadian Society of Clinical Investigation, the Hoffenberg International Medal Award of the Society for Endocrinology of the United Kingdom in 2013 and is Doctor Honoris Causa at the Universities of Caen and Athens. The Dr Fernand Labrie Fellowships of the Canadian Society of Endocrinology and Metabolism are awarded annually in his honour. In addition, starting in 2014, an annual Fernand Labrie Fellowship is awarded by the Laval University Research Center in Molecular Endocrinology, Oncology and Human Genomics.

In addition to the discovery of medical castration and of the now standard treatment of prostate cancer, which continue to help millions of men worldwide, there are 32 million women in the United States alone who could benefit from Intrarosa™, his newly discovered and developed treatment of vulvovaginal atrophy approved in November 2016 by the FDA. Intrarosa™ is a non-estrogenic treatment for vulvovaginal atrophy. This treatment uses Prasterone (DHEA), a compound without intrinsic estrogenic or androgenic activity which is transformed intracellularly into androgens and estrogens only in the cells and vaginal layers physiologically in need of these sex steroids. This innovative treatment provides a replacement for the local deficiency in sex steroids with no significant increase in circulating estrogens or androgens and consequently, no effect in the other tissues.

In addition, positive effects are observed on the four domains of sexual dysfunction, namely desire,

arousal, orgasm and pleasure, an effect secondary to local androgen formation and not found with estrogens. These observations are under further evaluation by Endoceutics.

Community involvement

Fernand Labrie has been president of Innovatech Quebec, a highly reknown investor organization of the Quebec City area, and is now Chairman of the Board of Quebec International, the body responsible for economic strategy in the Quebec City area, a city having the highest level of employment in Canada.

Fernand Labrie has been director of research at the Laval University Hospital Research Centre from 1972 to 2006, one of the largest research organizations in Canada with 1200 members.

Endoceutics' priorities towards its clients

Looking into the future, Dr Labrie believes that the female health market will be dominated by a focus on creating novel treatments for all aspects of

menopause based upon intracrinology or the normal physiology of sex steroids, a discovery of Endoceutics. In order to keep ahead of this emerging development, Endoceutics will be seeking to explore more clinical applications using the best technology largely developed within the company, taking as example steroid assays using mass spectrometry, now the gold standard in the industry. Change in the therapeutic field is central to improving the lives of women across the globe, and as such, Endoceutics will continue to embrace this strategy as the company seeks to be the leader of innovation in the pharmaceutical market.

Vision for Endoceutics in the near future

Endoceutics' overall aim is to offer to all women around the world the benefits of an efficacious and safe treatment of all the problems of menopause, which include hot flushes, vaginal dryness, sexual dysfunction, loss of bone, loss of muscle as well as memory and cognition loss. The company has a very strong desire to move science forward for a better life of their fellow citizens, and this will remain Endoceutics' ongoing goal.



Dr Fernand Labrie
Le Soleil, Yan Doublet

